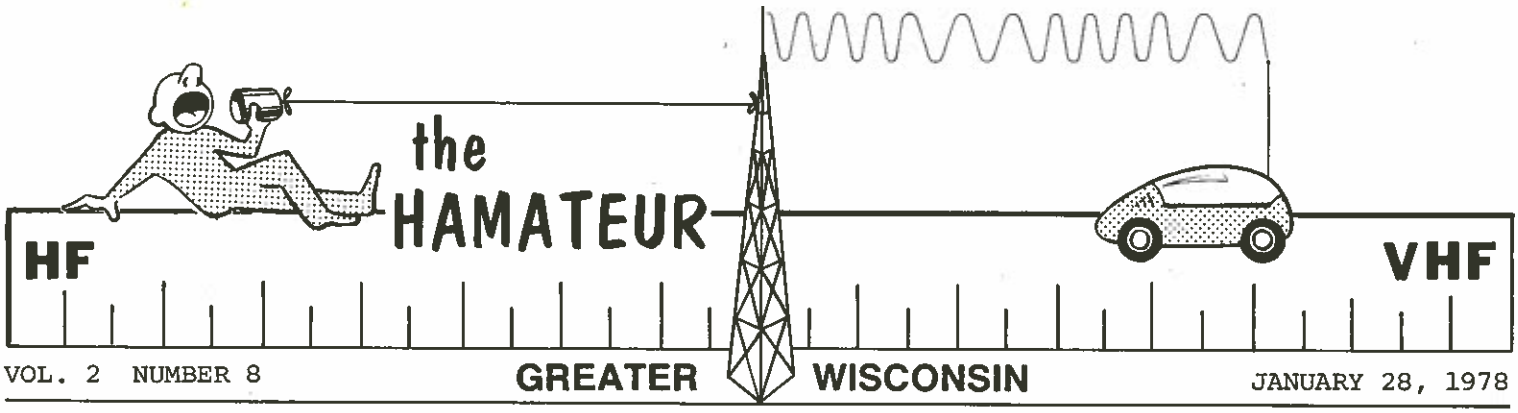

VOL. 2 NUMBER 8 GREATER WISCONSIN JANUARY 28, 1978

the HAMATEUR

The HAMATEUR is published monthly for the benefit of amateurs represented by the associated and sponsoring clubs. Reproduction with credit given, is granted for anything appearing within THE HAMATEUR. Deadline date to submit material for the month is the 5th. Publication date is the 28th.

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MRAC	W9MDG	Al Belanger	461-8272	87/27	W9LCJ	Fern Fisher	632-1529

WA9 Just Mouthing Off

WELCOMING NEW REPEATER USERS The popularity of Two Meter FM is demonstrated daily by the new calls appearing on our machines. Some are avid HFers looking to a different mode of operations, but most are first time voice communicators on the Amateur bands. Many are apprehensive and nervous about procedures used. What these individuals need and desire are Hams willing to take the time to talk to these first time repeater users. To gently inform them of the repeaters' policies and of most importance, make them feel welcome. For these new Amateurs are the future officers and involved members of our clubs. Let us all look back to our own first contact and treat these new comers as we had hoped to have been treated.

LEAVING OUR GROUP Departing our family this month are the members of the 93/33 Repeater group because of financial reasons. Hopefully they can rejoin at a future date.

REMINDER TO ALL CLUB TREASURERS Deadline date for your clubs complete roster is due February First. The list must include zip codes and phone numbers.

SPEEDY RECOVERY Our good friend Wes Correll, W9FY, at the time of this writing, is recovering at Columbia Hospital in Milwaukee. The aftermath of a mild stroke I've been told. Hopefully by the time you read this, Wes will be at home and on the airways once again.

ADDITIONAL COPIES SENT From time to time members miss an issue of the HAMATEUR for reasons beyond the scope of this paper. To save these individuals the trouble of running down the staff for an additional copy, we will be sending an additional three newsletters to each club's treasurer. It is hoped that this solution solves the problem. This figure is arbitrary and depending on a clubs needs, the number can be changed by written request. These may also serve as introductory material for new members.

BLESSED EVENT Congratulations to Pam, WD9ANZ and Marlin, WD9AXH, Weiss who became the proud parents of a bouncing baby boy, Brett Donald, Saturday, January 7th, 1978.

73's Larry McCalvy, WA9JMO

CLUB News

146.25 IN — MILWAUKEE COUNTY REPEATER SOCIETY — 146.85 OUT

FEBRUARY MEETING SCHEDULED The next meeting of the society is scheduled for Tuesday, February 21, 1978, to be located at Nino's, 3400 S. 108th (next to Doucas Oldsmobile). A good time is planned for all. All members note that this meeting will also incorporate the annual election of club officers for the coming year. The meeting is scheduled to start at 8:00 P.M. SHARP. All interested people whether members or not are invited to attend.

CLUB MEMBERSHIPS EXPIRE IN JANUARY As a final reminder to all WR9ABS members, dues are payable by January 1, 1978. Dues (currently $12.00) may be paid to the club treasurer, Paul, W9KHO.

UPDATED MEMBERSHIP LIST BEING PREPARED It is now being planned that an updated membership roster will be sent to all current WR9ABS members sometime during the next two months. This membership list has been the project of the club's vice-president, Bob, WB9TFE.

73's, Bill, WB9EFP

146.22 IN — SOUTH EASTERN WISCONSIN FM AMATEUR REPEATER SOCIETY — 146.82 OUT

MEETING Thursday, February 23, 1978 at WTMJ Studios, 720 East Capitol Drive, 7:30PM.
Hope all made it through the holidays without gaining too much weight or spending too much money. WR9ABK was ungodly quiet over the holiday season, perhaps everyone was having too good of a time elsewhere?
Much talk has appeared, all through the ham community, about the increase of the cost of the HAMATEUR, no need to worry though, general opinion is that even at twice the price the HAMATEUR would be a steal. Many Wisconsin Hams have come to rely on the HAMATEUR to see what's going on all through Wisconsin. Personally, I think the HAMATEUR has been a great boom to strengthening the Ham Fraternity. Keep them coming Larry and company, the paper's excellent!
Many big projects are nearing an end, but also many big projects are appearing on the horizon. Look forward to many good things to happen this year with SEWFARS. The upcoming meetings are going to be very important in what new avenues the club will pursue. It would do everyone good to try and make these meetings,(members or not). Interest has been stirred, by a few members, in some very exciting endeavours and I'm sure that the entire membership will want to be in on the ground floor.
SEWFARS is the up and coming group of the year, no other club is more involved on so many different avenues of communications. Come and visit us at our February meeting and see what I mean, You won't be sorry.

73 de WD9DHI, GREGG

146.31 IN — MILWAUKEE REPEATER CLUB — 146.91 OUT

TOWER TO GROW The 400 foot tower which supports the WR9ABM antenna as well as over twenty other commercial systems has received FAA approval to go to 600 feet. There will be a single receive antenna system at the 600 foot level with a combiner/splitter for the UHF commercial systems. Transmitting antennas will be located twenty to fifty feet lower. The WR9ABM antenna at the 375 foot level will not move. With our present coax, we are at the point of diminishing returns. Any additional height for more coverage would be offset by increased losses due to the additional coax required.
The move is good for us because the commercial antennas will be moved away, hopefully reducing intermod problems. WR9ABM is on the second last tower section. As a temporary measure, those systems on the top section will have to move down to our section so the new sections can be added.
1978 DUES If you have not received a dues notice by now, send your $10 check to the Milwaukee Repeater Club, Inc., P.O. Box 2123, Milwaukee, WI 53201. Please write your call and telephone number on the check. Family memberships (one QTH) are $10 also. Include a list of all names and calls in the family membership.
REPEATER MAINTENANCE Repeater on-the-air time increased from 3500 hours in 1976 to 4700 hours in 1977. Actual purchased material maintenance costs were $5. 4X150A final tubes were donated by W9NZF. A total of 21 maintenance trips were made to the site amounting to 714 miles of travel by WA9RYO.
NEW YEAR RESOLUTIONS (1) Let breakers in immediately (2) Be a listener, not a gasser (3) Use simplex if you are within 10 miles of a mobile (4) Put up a better antenna, don't rely on the repeater (5) Use the repeater for long hauls and as a calling channel

Al, WA9RYO

146.07 IN — MILWAUKEE COUNTY AMATEUR RADIO EMERGENCY SERVICE — 146.67 OUT

Meeting: Tuesday, February 7, 1978, at 7:00 P.M. at the Red Cross Building at 26th and Wisconsin Avenue
Nets: The weekly ARES net is Monday night at 9:00 P.M. on 07/67.
At the time of this writing (early January) plans are being formulated for the annual Simulated Emergency Test which will be scheduled for the first two weeks in February. While only in the initial planning stages, it will be in a format similar to the 1976 SET which used the Milwaukee Blood Bank as the operations center but with a different motif. All local amateurs are urged to be alert and participate when the SET is called. Details will be announced.
The main topic at the February meeting will be the nomination of a slate of candidates to be presented to the Board of Directors of AREC, Inc. The persons selected by the Board from this slate will serve three-year terms as Directors, filling the vacancies which were temporarily filled last November.
I want to thank all members who have responded to my letter regarding mass casualty drills, and I hope that by now everyone has found time to return the bottom portion to me. I am sorry that the language is unclear in places, but the intent of the question was "can you be available during the day for a drill?" I am hoping that most members can find a way to take one day off if given enough notice and assuming no other conflicts. I realize that a lot of other factors enter in here. All I am trying to do is identify those who may be able to participate. In this way, I can eliminate having to call everyone on the roster, some of whom simply cannot be available. Unfortunately, my letter did not make this clear. If you misunderstood my letter and the above changes your answer, please contact me.

John, WB9SMM

147.87 IN

LAKESHORE REPEATER ASSOCIATION

147.27 OUT

The next regular meeting of the Lake Shore Repeater Association will be held January 31, 1978, 7:30 P.M., Red Cross Building, Racine, Wis. Interesting and important proposal will be presented to the membership for consideration and vote.

REMINDER: Membership renewals are now due. Charter members, $5.00; regular membership, $10.00. Send renewals to club secretary, Fern Fisher, 1636 Grange Ave., Racine, WI 53405, or pay dues at the next meeting.

All paid-up members of the Lake Shore Association should be receiving a copy of the monthly publication HAMATEUR, starting with the November issue. If you have not been receiving your copy, please notify the club secretary. If members are to receive their correspondence, club secretary must have your correct mailing address. If we do not receive notification of address changes, mail will be sent to the address we have on file. If not correct, you more than likely will not receive your mail.

WHAT'S WITH OUR MEMBERS? The association welcomes our first new 1978 member, Bill Neumiller, WB9OCU. Bill is the brother of Phil Neumiller, W9HAG. Welcome aboard, Bill!

W9HAG and W9EWW are both out of the hospital and back on the air. Their red corpuscles are now able to move without restriction and are bringing new energy and vitality to both. Glad to have you back, fellows!

K9IE, Pete Schriber, and Susan King, WD9EIP, now sharing rigs and QTH. The knot was firmly tied on December 4. Congratulations from all of us.

WB9QMX, Harold Nelson, again holds General Class license. Hopes to continue to upgrade. Good studying, Harold. Incidently, Harold's wife has taken her exam. As of this writing results are not known, but we are expecting to hear a new call from the Nelson QTH.

Don Grey, former association secretary, is now WB3JOC and has the new address of 3 Tanglewood Drive, Greensburg, Pa. 15601. Occasional contact with him has been made on 40 meters.

K9DQW, Jack Schweitzer, had his Vari-tronics IC2F taken from his car while parked in the lot at WTMJ. If anyone tries to sell you such a rig cheap, contact Jack.

W9PHJ, Herb Ladwig, has been studying the rotation of the earth, the movement of the tides and the benefits of upslope and downslope in his quest of the ever better antenna.

PUBLIC SERVICE The repeater was used several times, in the past month, to report accidents. Amateurs reporting and assisting were WA9YTH, K9UUT, WB9USI and WB9YFU.

TECH NOTES K9MLD, WA9HOH and WA9YTH, Joel, Dick and Corky, were at the repeater site by 9:00 A.M. the day after Christmas. Purpose: repair of feed line connectors. After these repairs were completed, considerable improvement in the system was noted.

CU ALL AT OUR JANUARY MEETING. 73, Fern, W9LCJ

M·R·A·C

MILWAUKEE RADIO AMATEURS' CLUB

M·R·A·C

MILWAUKEE RADIO AMATEURS' CLUB welcomes interested persons to attend their regular meetings held on the third Thursday of each month (except July and August) at 7:30 P.M. at Wauwatosa Savings and Loan Building at 7500 West State Street. Plenty of parking. We are in our 60th season! Preceding each meeting, in the period 7:00 to 7:30 P.M., the instructors from our school offer aid to beginners and others with Ham radio problems.

For our February 16 regular meeting, MRAC presents Mr. Sherman Carr, W9NGT, with a talk on "Fundamental Ham Antennas". Mr. Carr is an engineer with the Chrysler Outboard Corp. in Hartford, Wisconsin, and is Emergency Coordinator for Washington County.

New spring classes for Novice and Technician/General start Wednesday, February 22, 1978, at Wauwatosa East High School, 76th and Milwaukee Ave. Classes are free, but a $5.00 registration fee is required in advance. This fee is refunded if you attend 9 of the 12 class sessions including the last one on May 17, 1978. Classes are on a first come/first served basis. Send check or money order to MRAC at 4975 N. Hopkins St., Milwaukee, 53209. Include a self-addressed and stamped envelope (and your phone number) and your receipt and registration form will be sent to you.

New calls: WD9AKW, EUM, GHA, GHW, GZG, GZI, GZM, HAB, and HBZ.

Coming Attractions: Annual Auction at May 18 meeting....Field Day, June, 1978. 73, Al, W9MDG

146.19 IN

CMØS

146.79 OUT

Well, out with the old and in with the new, and it is time to begin this year's list of "things to do" (commonly known as the dream sheet). I got out last year's list and a quick perusal shows that we merely transfer everything to this year's list—instant list. Scanning the list, I determined that we can do "this", "this" and "this" "next week", and the rest on the "week after that". Though two years ago we did not have any problems accomplishing the projects on the list—we lost the list!

As far as the antenna work which was put off, "next week" arrived last week, and as predicted, the weather was much less than desired. But to beat all, once the faulty balun was off the tower, it was being "convinced" against the wall to open up and yield its treasures. It did. The treasures were seen briefly, very briefly, for they then rolled into one of the roof's endless drain shafts with a certain person's N connectors still on them. He asked for them just as the thing rolled out of sight....

We understand that the 10/70 RTTY repeater has been sold to another local group. A well deserved "thank you" is given to Jerry, K9HXA, for his dedication to VHF RTTY in the Milwaukee area. We wish the new 10/70 group success. 73, Scott M. Freeberg, WB9WFA

Next meeting: 8 February, 7:00 P.M., Forest Home Library. Be there....
Six meter band conditions for the month of December were adequate. Local stations report several very good morning openings during the pre-Xmas week. For we working guys, the big activity nights were the 3rd, 4th, 20th, and 23rd. During these periods, sporatic-E produced extensive openings from eastern Canada, down the Seaboard, and across the Gulf Coast states. Though conditions were not always the best, we did get a chance to wish holiday greetings to some of our many friends around the country. Let's hope January will be better.
Well, here we are into the new year, 1978. Will it be boom or bust? How far has 6MIC come? And, where is it going? The 6 Meter Interest Club was formed by several area hams who saw the need to promote more activity on this most versatile of bands. Six meters was nearly void of local activity. Gone were the multitudes who had enjoyed the spectacular DX of past solar cycles. This dedicated group of 6m ops started their crusade to revitalize the band in the S.E. Wisconsin area. By word of mouth, via the 2m repeaters, and any way they could, they spread the message, "six is alive". Their efforts were rewarded. Old timers dusted off long dormant rigs and rookie hams started picking up gear for six. Soon the band was crackling with locals, day and night, any day or night. Wisconsin was once again on the six meter map. Hams around the country were talking about the "great bunch of active 6m guys in Wisconsin". Our nets were among the more popular on the band. The Hamateur was conceived in the meeting rooms of 6MIC. A certificate and awards program was well underway. The ball was rolling and there was no way to go but up. A classic success story.
So much for the look into the past. Let's take a look at where we are now, and where we want to go. During 1977, on the air activity by 6MIC members gradually declined to about 10% of the 1976 level. Long delays were experienced by DXers applying for 6MIC and MAN certificates. Attendance at meetings went from an average of two dozen to a half dozen (on several occasions to as low as two people). Net check-ins fell off drastically and, for the most part, were not 6MIC members. Volunteer net control stations frequently failed to meet their commitments. These conditions finally led to the cancellation of the nets. Let me add at this time that two non 6MIC stations, WD9AXH and WD9DHI, assumed the responsibility for the continuation of the nets. Hey, 6MIC! What does it tell you when non-members have to carry the ball for you? Thanks and good luck to Marlin and Gregg.
In the past I have attempted to promote vhf, six meters in particular, in this column...with the hope that band activity would increase, and it follows that 6MIC would benefit. Today I address my appeal to current members of the club. 6MIC is dying.....It's your club and only you can save it.....The many fine radio clubs and repeater groups in this area are successful only because their officers and members worked hard to make them so. Even with their more universal appeal it takes massive involvement to make them work. A more specialized club, such as the 6 Meter Interest Club, requires even more dedicated involvement. If it is to flourish, every member must make a fair share contribution. At the top of the list should be a continuing effort to improve your station, near "state of the art" is the goal. Experiment with the many modes of propagation available on six meters, and where better to share your experiences than on the club net. Accept responsibilities within the club. The more hands at work the lighter the load on each. Be active on the band and in the club. Back up your professed interest with action. Keeping 6MIC alive takes no more than normal ham activity, but it most certainly does take at least that. Okay, 6MIC, where do we go from here???????????????
A happy and prosperous New Year to all... 73, Bob, WB9OPD

THE WISCONSIN CHAPTER
QUARTER CENTURY WIRELESS ASSOCIATION, INC.

The letter below from our National President was in my mail when I arrived back from California on New Year's Eve. If you wish to list your 'expertize' in the QCWA Data Bank, send your resume either to me or directly to W5EJ, 1409 Cooper Drive, Irving, Texas 75061.

16 Dec. 1977

To All QCWA Chapters,

We have been talking a good deal about the vast reservoir of knowledge and experience represented within the membership of QCWA and our intention of putting this potential to use for the advancement of Amateur Radio.

I have talked to our General Manager about setting up a data bank in his computer system whereby he could list a compendium of our members who are recognized authorities in the various technical and operational phases of Amateur Radio so we can know where to turn when we need help and/or consultation.

What we need now is your input. Will you please make a survey of the "experts" in your Chapter - or known to your otherwise - who could be considered particularly knowledgable in any particular field.

We would like this to be a continuing project, to keep QCWA Headquarters up-to-date on the experts within our midst. However, we would like to have some quick input in view of a couple of projects that are now being considered.

Please advise General Manager Ted Heithecker, W5EJ, as soon as possible, who you believe should be included in this list of QCWA experts. We believe we stand in a position to offer much.

73, Harry S. Gartsman, W6ATC, President

Tom Gettelman, W9IZO, has made arrangements for our Spring Beer Party at the Miller Inn on West State Street Friday evening, April 14, so mark your appointment calendar now.
We are happy to welcome Charles Dawson, W9CUW, to membership in the "Grandfather's Club' with arrival of Mathew Carl Dawson in late November.
The recently announced increased cost of this publication will exceed our yearly dues of $2.00. If you enjoy getting this comprehensive little publication and don't object to a possible $1/yr increase in dues, please let me or your chairman W9YFW know. 73, Travis, W9VQD

RACINE MEGACYCLE CLUB

The next meeting for the club will be February 13, Monday night at 7:30 P.M. at the Red Cross Building on Taylor Ave Road. Everyone should have his 1978 dues paid, as a new list of members will be made up, and that will be used for the list to be given to the Hamateur newspaper. Simulated Emergency Test Operating will be one topic that no one will want to miss.
Plans for the grand-daddy of all hamfests should be made soon. All going to Dayton from this area should have a meeting place and motel reservations made well in advance. Plans for a greater and better Field Day will be made at this meeting also.
Don't overlook ten meter CW operation this winter. I just signed with an OH2, DL2 and a ZL3 using my 350 foot Hertz antenna and 100 watts.
N9HI is sporting a brand new Cadillac and is active on 160 meters in the evenings. W9HAG got a new toy....a computer. W9FBY is on .94 Simplex and 7250 Khz at midnight. W9RMY has a home up in the woods of northern Wisconsin and is playing with a 160 meter receiver. WB9TCX is converting a bunch of IC-230 for 15 Khz splits. Everyone is sorry to hear that W9RCC/6 has been very sick. Activity on the walleye net on Sunday mornings has been very slow. Join in on the net around 9:00 A.M. on about 3925 Khz. 73, Stu, W9HI

3940 KHz

OZAUKEE RADIO CLUB, INC.

146·37/97

MEETING Next scheduled meeting of the Ozaukee Radio Club is February 8, 1978, at 7:30 P.M. at the Cedarburg Civil Defense Shelter. It is hoped at this time a guest speaker will be obtained for this meeting.
THANKS to WA9JOB who gave a very informative talk at the December meeting on the new satellite TV dish near I-43 and Mequon Road.
MEMBERSHIP DUES The 1978 membership dues are now due and your continued support is necessary to maintain our groups. Membership invoices were mailed in December, so if you've put it off, please grace the PO box with your check. (Additional contributions are always accepted at the same location.)
W9CQO The Ozaukee Emergency Net continues to meet every Sunday at 1:00 P.M. on 3940 KHZ. See you there!
SPECIAL THANKS to all those who contributed their time in 1977 to be club officers, technical advisors, repeater doctors, split-site planners, post meeting presentators, etc., etc... 73, Barry Anderson, WB9SFK

Happenings

RADIO JAMMER CLOSED DOWN

Our fine repeaters have been sporadically plagued by individuals bent on disrupting and interfering local communication. I have on numerous occasions in this tabloid made various comments about this problem, but I believe the following article by WB9NAS, Peter O'Dell, Public Information Officer, ARRL, that appeared in the January, 1978, issue of QST tells it best.
"The system does work! Two hams have pleaded guilty to broadcasting obscene, indecent and profane language, and to interfering with amateur radio communications. John R. Souvestre, K5NY and Keith M. Schexnayder, WB5AWN, were released on $2,000 personal appearance bonds pending sentencing after pleading guilty on November 2 in the U.S. District Court in New Orleans, LA.
"Area amateurs were somewhat shocked because Souvestre and Schexnayder have been active on the local scene for years and up to this point appeared to be "pillars of the community." Souvestre holds an Amateur Extra Class and formerly served as SEC and Assistant SCM. He alsc holds a master's in EE from LSU and a "First 'Phone." Schnexnayder holds an Advanced class license and Second 'phone commercial ticket. The FCC indicated that both the commercial and amateur licenses held by the men will be reviewed by the FCC in Washington for possible suspension or revocation.
"Over a year ago the repeater users in the New Orleans area began to experience deliberate interference. The unidentified transmissions contained obscenities and the sound of a "laughing box." Initially, local efforts failed to locate the offenders; however, the local group (New Orleans VHF Club) documented the case as thoroughly as possible. The information was then presented to the local FCC office. Wes Staudch, W5VBX, past president of the New Orleans VHF Club, and Philip Spencer, W5LDH (an attorney at law), visited the U.S. Attorney for Eastern District of Louisiana and brought him up to date on the situation.
"Behind a cloak of "bureaucratic indifference" the FCC quietly took measures to bring the situation to a halt. In late June the FCC brought one of its most sophisticated direction finding units to the New Orleans area. Less than an hour after arriving in town and setting up operations, the jammers had been pinpointed and positively identified—and they weren't sitting still, either. Bob Bradley, K5EDV, of the FCC Office in New Orleans, indicated that the culprits were driving at a high rate of speed and in a manner apparently designed to avoid location by conventional direction-finding techniques. In other words, the FCC nabbed two individuals, technically competent beyond a shadow of doubt, who were using all their skills to avoid detection.
"By the time that the FCC agents had finished their investigations, they had conclusive evidence of violations on eight different occasions. At this point the evidence was turned over to the U.S. Attorney to prepare the case against the two. Bradley indicated that this was the hardest part—knowing the identity of the culprits and knowing that the case was being prepared against them, yet pretending ignorance and indifference when discussing the situation with local amateurs. Months later, when an airtight case had been put together, legal action was taken. When confronted with the overwhelming evidence against them, both of the violators "caved

in." Plea bargaining resulted in the two pleading guilty to three of the counts and the U.S. Attorney dropping the other five.
"Even as we go to press, this same thing is happening in several other locations around the country. Obviously until the legal matters are brought to head, we will not comment on them.
"The message is clear: If you are suffering from deliberate interference, document your case as thoroughly as possible. Take your documented case to the authorities, both the FCC and the U.S. Attorney in your area. Then wait patiently. The FCC will pretend to be ignorant of and indifferent to the situation up until the minute that legal action is taken against the culprits. If you are one of the culprits, mend your ways and then pray that a well-dressed stranger does not come knocking at your door." QST

This recently received memo from the Director of the Registration Bureau may be of interest to amateurs.

MEMORANDUM R-2-76 DATED 4/15/76 IS HEREBY RESCINDED AND REPLACED BY THIS MEMO. PLEASE DESTROY THE RESCINDED MEMO.

Please note attached copy of Chapter 183, Laws of 1977, relating to special license plates for holders of amateur radio licenses.

Chapter 183, effective December 9, 1977, amends s. 341.14 (2) Wis. Stats., and provides that:

1. The fee for issuance of amateur radio plates is increased from $1 to $10. This applies to the original issue and to renewals when new plates are issued.
2. Holders of FCC amateur radio station licenses are no longer required to have transmitting and receiving equipment installed in their vehicle in order to qualify for amateur radio license plates.

Chapter 43, Laws of 1977, which was effective July 15, 1977 amends s. 341.14 (2) Wis. Stats., and provides that amateur radio license plates may only be issued for automobiles and station wagons.

The best time to change to an amateur plate is at renewal time. Amateur license plates expire January 31. An application can be handled through the mail and requires your renewal notice, Title, Form MVD 2105 (which will be revised), and proper fee. The fee will be pro-rated for the months left in the amateur plate licensing year. Keep in mind that you figure the months from the expiration date of your present license plate to January 31 that of the amateur license plates expiration, multiply the months by $1.50 and add $10.00. Following the initial licensing the renewal date would be January 31 for $18.00. The $10.00 extra fee would not be paid again until they issue new plates, which might be 1979, so beware, if you make the move now you may be paying the extra $10.00 two years in a row.

Donald J. Rech, WB9OJC

P.S. Larry, after one year of paying membership dues to a variety of amateur clubs in my area and being in good standing with the same clubs, it occured to me that I had invested a sizeable down payment on ham equipment in dues. The point I would like to make is that we should support our local amateur clubs; however, in this area of the state or states there are so many that we might be interested in that it gets very expensive belonging to all the clubs. The cooperative effort on the news letter might be a start in another cooperative venture. Would it be possible to develop a cooperative venture where the local amateurs could subscribe to their primary club with full membership dues and also at that time submit a contribution to the other clubs of his choice in the area in an amount reduced from their regular membership dues and become an associate member of those clubs. Today most clubs support repeaters and most repeater users desire to support those clubs. However, many of us operate in an area served by a half dozen or so repeaters. While such a program might be difficult to administer, it might help bring in more revenue for all clubs.

Technical Topics

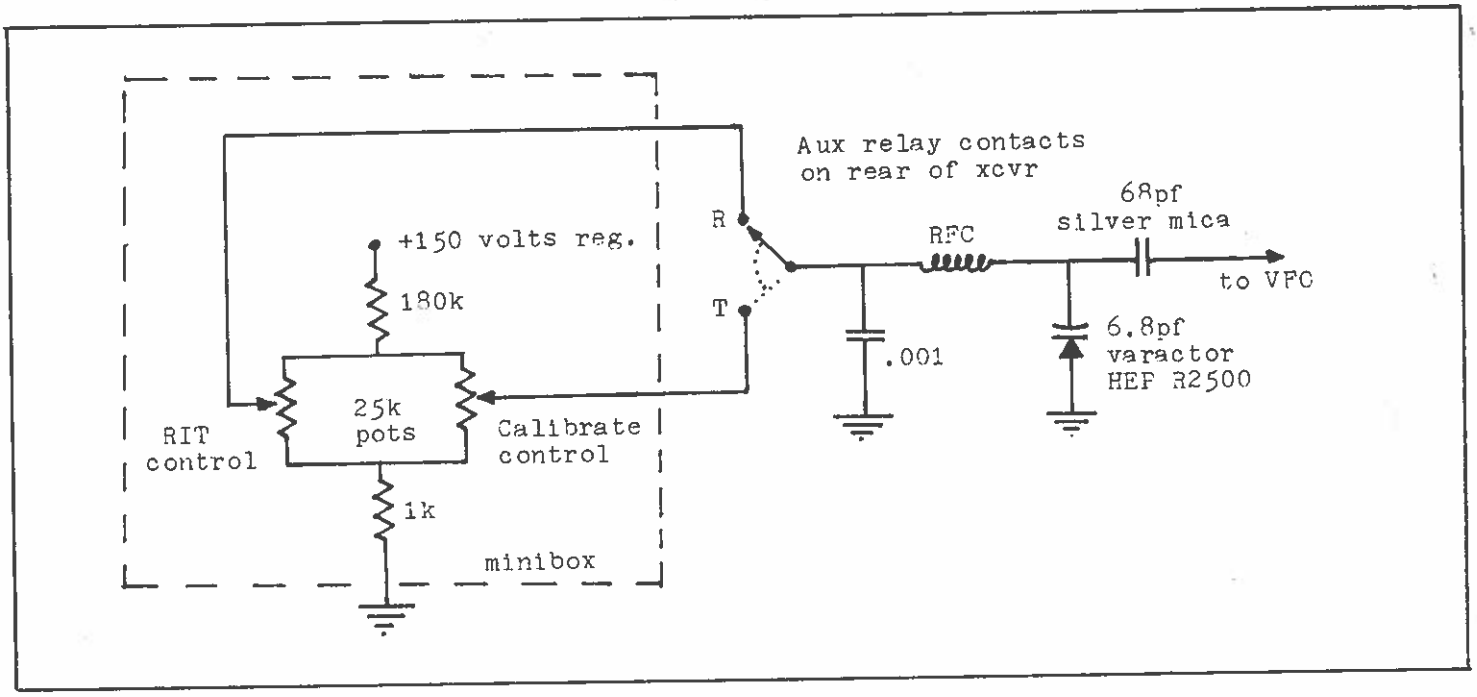
Technical Topics **Technical Topics**

R I T C O N T R O L F O R L O W - B A N D R I G S

W9FZC - John LaBlonde

Those of us who operate the low bands occasionally find that sometimes this gear is lacking in a few convenient features. It certainly isn't worth buying a new rig just to get a sidetone oscillator or receiver incremental tuning control or other handy item, but it is worth an attempt at modifying the radio yourself. Here's a nice simple circuit suggested by John, W9FZC. It is a receiver incremental tuning (RIT) control for use with many popular transceivers. So what's an RIT control, you say? On many transceivers you have no independent control over the receive and transmit frequencies. On SSB they are the same. On CW usually they are offset a fixed amount, perhaps 800 Hz, so that you can hear a beat note on the incoming CW signal. Has it ever happened, on SSB, that each time you "turn it back" to the other station, he sounds mistuned? Then you retune him, and he retunes you, etc? Eventually you "waltz" each other off the end of the band. If there only was a way to tune the receiver without affecting the transmit frequency. There is! It's called an RIT control. It allows you to offset the receiver tuning by 1 or 2 KHz. This should be adequate to satisfy almost any tuning problem.

The circuit as shown is for tube-type VFO's such as the NCX-3. For use with Swan transceivers (with their

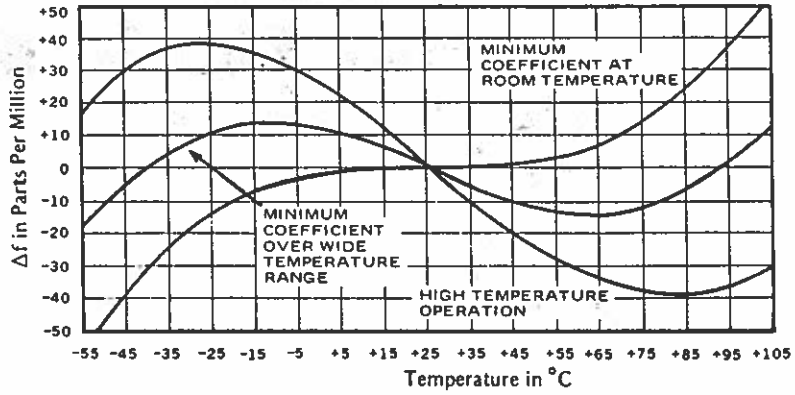


solid-state VFO's) change the 68 pf capacitor to 10 or 15 pf and connect to the output side of the 2N706 oscillator transistor. If you are already using the auxilliary relay to switch a linear, substitute a small 12v DC relay with SPDT contacts to do the job. In that case wire the new relay coil across the aux. relay coil so it will switch when you go from receive to transmit. Radio Shack stocks such small relays.
A portion of the components should be mounted in a minibox attached in a convenient position to the side of your rig. The rest should be near the VFO itself.
Once the circuit is connected, it will have to be calibrated. Have a friend listen to his receiver on a preassigned frequency. Tune your transceiver to that frequency, then adjust the calibrate control so your transmitted signal is zero-beat on his radio.
This control is now set and should require no more adjustment. The control you use when operating is the RIT control. When your friend transmits, you should be able to tune him with the RIT. (This won't affect your transmit frequency.) John says that he has a 1500 Hz swing on either side of his transmit frequency.
The important component in this circuit is the varactor (or varicap) diode. When it is reverse-biased it will exhibit a capacitance proportional to the reverse-bias voltage. This capacitance is part of the tuned circuits in the VFO and thus changes the VFO frequency. Notice that it typically has a very small value of capacitance. For this reason locate the varactor and the three associated components very close to the VFO. Keep their leads short. The wire going to the relay and the parts in the minibox are not as critical. The RF choke (RFC) can be almost anything out of the junkbox. Any small choke should be fine.
Remember, if you have any questions or circuits which could be of interest to our readers, be sure to send them in. Thanks to John, W9FZC, for this item. 73, Steve, WA9VNJ

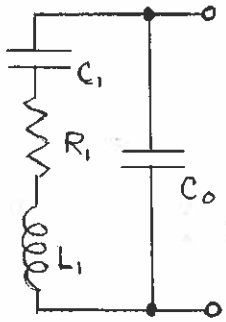
HIGH FREQUENCY OVERTONE CRYSTALS

W9KZO - John Holmbeck

In order to understand overtone crystals, it is first necessary to be aware of some basic concepts and definitions. An overtone is the mechanical equivalent of an electrical harmonic. When a crystal is operated on its overtone, there is practically no energy present at the fundamental frequency. In the case of thickness shear mode crystals such as the AT cuts used at high frequencies, only the odd numbered overtones can be excited because the even numbered ones cancel out. On large low frequency plates it is possible to drive the crystal in either odd or even overtones by proper shaping and location of electrodes. Any crystal, with only two electrodes, can be driven on its odd overtones by appropriate circuitry, and any overtone crystal of this description can be driven on its fundamental.
Contrary to a popular myth, overtone crystals are as stable as fundamental types and from a practical standpoint, can be more so. They have the same set of temperature coefficient curves but with a slight angle difference. For example, either fundamental or overtone crystals can be cut to conform to the same curves. The misconception arises from the results of using a crystal designed for fundamental operation on its overtone. For example, if a fundamental crystal designed for the "high temperature operation" curve is used on its overtone, its curve of frequency versus temperature will be like the one for "minimum coefficient at RT".
Considering a crystal to be used either fundamental or third overtone, C_o will be the same for either mode.



Since L_1 is the mass of the active part of the quartz blank, it will remain about the same for either mode. Using the formulae shown, if L_1 remains the same, going to three times the fundamental frequency will require that C_1 be reduced by a factor of 9. If you consider C_o and C_1 as a capacitive voltage divider, it is obvious that the crystal is "decoupled" from the oscillator by a factor of 9. Thus, a given change in input capacity will produce only 1/9 as much frequency change as on that same crystal oscillating on its fundamental and multiplied by 3. On 5th overtone crystals, this factor becomes 25. Of course this also limits the available frequency trim by the same factors.



TYPICAL VALUES
ON ONE CRYSTAL
ON BOTH FUNDAMENTAL
AND THIRD OVERTONE

Inductance is slightly higher on third overtone because active area is smaller.

	Freq.	Δf20pf*	R_1	C_o	C_1	C_o/C	L	Q
FUND	15.2 MC	7.9 KC	5 ohms	6.2pf	.027pf	227	4 MH	76 K
3rd OT	45.6 MC	1.8 KC	15 ohms	6.2pf	.002pf	2962	5.8 MH	110 K

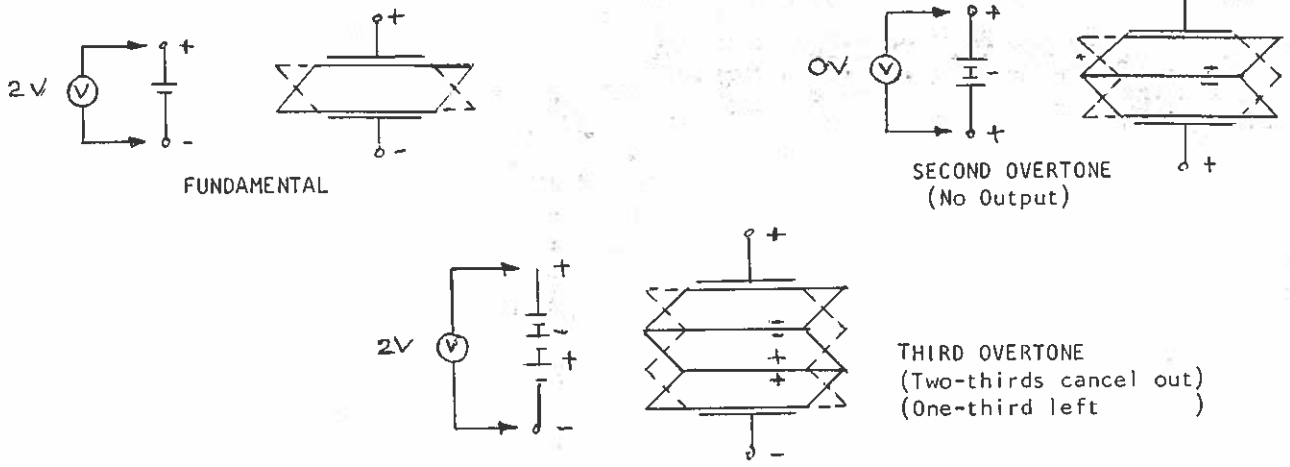
* FREQ DIFF between series resonance and antiresonance with a 20pf load capacity

High frequency overtone crystals require some degree of oscillator tuning to make them operate on the overtone rather than the more closely coupled fundamental. These oscillators fall into three basic types, (1) Pierce, (2) Tuned plate, (3) Series.

To make a Pierce oscillator drive a crystal on its overtone, it is necessary that the plate circuit tune above the fundamental frequency but below the overtone. On a tuned plate oscillator, the plate must be tuned just above the overtone. A series resonant oscillator is one that is capable of running at the crystal frequency with a small resistance in place of the crystal. It utilizes the series resonant frequency of the crystal which is below the frequency obtained in the other two types.

Overtone crystals are generally more practical for receivers than for transmitters because they are more sensitive to high power levels than fundamental types. As long as a great deal of power gain is required, it may as well include multipliers. The advantage in receivers is primarily freedom from spurious signals as well as simplicity.

The overtone frequency does not coincide exactly with the harmonic because of "end effects" similar to those on antennas. With electron coupled oscillators, some precautions are necessary if the crystal is to run on the fundamental with the plate tuned to the third harmonic. Under favorable conditions such a circuit can drive the crystal on either frequency, or even both at once. In the latter case, the difference between the overtone and harmonic is also produced, usually resulting in an audible beat. Contrary to much of the data in the FCC tests (at least in the past) the X and Y cuts are no longer used for high frequency control. A modified version of the X-cut is used at low frequencies (under 500KC).



Edge view of thickness shear crystal showing nature of motion and its relationship to instantaneous polarity.

Most modern crystals are plated. With extreme drive levels, low frequency crystals can be fractured, but they will change frequency quite drastically first. Plated high frequency crystals seldom shatter. At extreme levels the plated electrode may be burned off, but the quartz will still be intact. They too give ample warning of excess drive by changing frequency. Most CB gear today uses overtone transmitter crystals. In an effort to keep the number of tubes at a minimum, the crystals are run at high drive levels, resulting in severe frequency shifts during the first few seconds of operation. Another frequent symptom of over-drive is "motorboating" on crystals of this type.

In summary, overtone crystals properly used can be more stable than fundamental crystals multiplied to the same frequency. They are limited in trim range and power handling capabilities, but make for simplicity and a minimum of spurious signals being generated. While crystals designed for fundamental operation can be used on their overtones, they will perform poorly compared to crystals designed for overtone operations.

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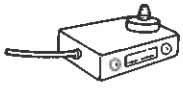
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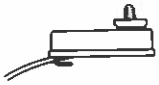
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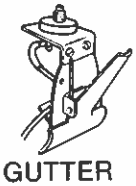
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WANTED: T-4X Series transmitter and AC supply, HF vertical, 2-mtr handy talkie, and 2-mtr amplifier. Contact Howard Kaufman, WA9TOP, 2948 N. Murray St., Milwaukee, WI 53211 963-9172